

Claims

1. Magnetic resonance tomography device comprising a toroidal magnet body (1) surrounded by a similarly toroidal magnet shell (12) which surrounds and defines an inner area (21) in the form of a cylindrical area about the torus axis in the radial center of the magnet shell. The magnet body is disposed in the toroidal inner area of the magnet shell and a gradient coil system (2) arranged on a cylinder surface is disposed in the inner area (21) and an inner encapsulation cylinder is disposed in the radial inner area of the cylinder surface. The magnet shell (12) and the gradient coil system (2) are externally and acoustically sealed off from the inner encapsulation cylinder and a capsule (22), which completely encloses the magnet shell in the radial outer area and is connected to the inner encapsulation cylinder in an acoustically sealed manner, whereupon acoustic vibrations, which are generated when the gradient coil system (2) is switched and which are transmitted to the magnet shell (12), do not penetrate into the toroidal outer area, especially not into the inner area (21).

characterized in that the capsule (22) represents a three-layer system, whereby the outermost layer comprises a cover layer (26), the center layer comprises a full foam layer (25) and the inner layer comprises a partial foam layer (24) containing foam patches or foam strips or the outermost layer comprises a cover layer (26), the center layer comprises a partial foam layer (24) containing foam patches or foam strips and the innermost layer comprises a full foam layer (25).

2. Magnetic resonance tomography device according to Claim 1, characterized in that the cover layer (26) has a high mass per unit area.

3. Magnetic resonance tomography device according to one of the preceding Claims,

characterized in that the full foam layer (25) accounts for 2/3 and the partial foam layer (24) 1/3 of the total layer thickness of the system.

4. Magnetic resonance tomography device according to one of the preceding Claims,

characterized in that the surface fill coefficient of the partial foam layer (24) is up to 15% to 25% foam in the form of foam patches and/or foam strips.

5. Magnetic resonance tomography device according to one of the preceding Claims,

characterized in that the width of the foam strips and the foam patches is around 5 cm.

6. Magnetic resonance tomography device according to one of the preceding Claims,

characterized in that the capsule (22) has cutouts at suitable points.

7. Magnetic resonance tomography device according to Claim 6, characterized in that the cutout comprises an air bridge (35) in which foam strips with graduated offset toothing (27) produce a labyrinth, through which the air can penetrate but acoustic vibration is attenuated.

8. Magnetic resonance tomography device according to one of the preceding Claims,

characterized in that the center of the inner encapsulation cylinder comprises a cylindrical HF resonator (13) when viewed axially and as a result of cylindrical carrier tube extension pieces (31) has a length overall that is longer than the gradient

coil (2) behind it when viewed radially, whereby tongues (30) are arranged on the carrier tube extension pieces (31) on the base side.

9. Magnetic resonance tomography device according to Claim 8, characterized in that the capsule (22) is flange-mounted in an acoustically sealed manner on the tongues (30) and on the carrier tube extension pieces (31).

10. Magnetic resonance tomography device according to Claim 8, characterized in that the carrier tube extension pieces (31) are expanded in a tapered manner in the front area.

11. Magnetic resonance tomography device according to one of Claims 8 to 10, characterized in that the outer ends of the carrier tube extension pieces (31) are provided with reinforcing rings (32).

12. Magnetic resonance tomography device according to one of Claims 8 to 11, the outer ends of the tongues (30) are provided with reinforcing rings (32).

13. Magnetic resonance tomography device according to one of Claims 8 to 12, characterized in that the tongues (30) have additional reinforcement.

14. Magnetic resonance tomography device according to Claim 13, characterized in that the additional reinforcement is achieved with further rails (33).